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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,266	02/10/2004	Larry Sadwick	9902-5752.1US	1269

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EXAMINER

AL NAZER, LEITH A

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,266

Applicant(s)

SADWICK ET AL.

Examiner

Leith A. Al-Nazer

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 3 and 5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4 and 6-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 and 16 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Drawings***

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because the drawings filed on 10 February 2004 and 16 July 2004 are informal and are suitable only for examination purposes. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because:

Art Unit: 2821

- a. Examiner is unsure what structure Applicant is attempting to illustrate in figure 3.
- b. Figure 5 shows two different views of the invention, and, therefore, each view should have its own figure number.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 4 is objected to because of the following informalities:

Art Unit: 2821

- a. Lines 7 and 8 of claim 4 are an exact duplicate of lines 5 and 6 of claim 4.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1, 2, 6-13, 15, 16, 18, 19, and 22-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "A pair of self-alignable, ladder-like structures integral with one another in a single sheet of electroconductive material wherein a hinge joint is formed parallel to the rails of the ladder-like structures..." This recitation is vague and indefinite at least for the reason that it is unclear how the pair of ladder-like structures can be integrally formed on a single sheet of electroconductive material and, simultaneously, have a hinge joint formed between them. Claims 2, 15, and 18 have similar structural recitations as those outlined in claim 1 above. Therefore, claims 2, 15, and 18 are held to be vague and indefinite for the same or similar reasons as claim 1.

Art Unit: 2821

Claims 6 and 18 recite the phrase "with through linear bore". This phrase is vague and indefinite, and, as a result, Examiner is unsure what structure Applicant is attempting to claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claim 1, 2, 6-8, 13, and 22-24 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,322,996 to Schrager.

With respect to claim 1, Schrager teaches a pair of self-alignable, ladder-like structures integral with one another in a single sheet of electroconductive material (figures 2-7) wherein a hinge joint (portion opposite to reference numeral 35 in figure 4) is formed parallel to the rails of the ladder-like structures and wherein the rungs of each are sized and spaced to be aligned with one another when the hinge is in a closed position and to form an elongated tunnel therebetween (figures 4-7).

With respect to claim 2, Schrager teaches a pair of ladder-like structures positioned in register with one another to form a tunnel therebetween (figures 4-7) wherein the structures are integral with one another and have a hinge joint

Art Unit: 2821

(portion opposite to reference numeral 35 in figure 4) axis parallel to the longitudinal axis of the tunnel.

With respect to claim 6, Schrager teaches the electroconductive material being sufficiently malleable (figures 2-7) to have the pair of ladder-like structures folded about a continuous linear hinge member (portion opposite to reference numeral 35 in figure 4) to form an elongated cavity with through linear bore.

With respect to claim 7, Schrager teaches the electroconductive material being curable to form a rigid structure (figure 5).

With respect to claim 8, Schrager teaches the rigid structure comprising a circular cross-section (figure 5).

With respect to claim 13, Schrager teaches the rigid structure comprising molybdenum or molybdenum alloys (column 3, lines 11-20).

With respect to claim 22, Schrager teaches the hinge joint axis being configured to allow the pair of ladder-like structures to fold and form the tunnel having a defined cross-section (figures 4-7).

With respect to claim 23, Schrager teaches the defined cross-section being selected from the group consisting of: circular, square, hexagonal, and octagonal (figures 2-7).

With respect to claim 24, Schrager teaches the tunnel comprises at least one of: copper, copper alloy, molybdenum, molybdenum alloy, conductive ceramic, and silicon (column 3, lines 11-20).

Art Unit: 2821

9. Claims 1, 2, 4, 6-8, 14-20, 22, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,508,108 to Salisbury.

With respect to claims 1 and 7, Salisbury teaches a pair of self-alignable, ladder-like structures integral with one another in a single sheet of electroconductive material (figure 4a) wherein a hinge joint (bottom portion of structure in figure 4b) is formed parallel to the rails of the ladder-like structures and wherein the rungs of each are sized and spaced to be aligned with one another when the hinge is in a closed position and to form an elongated tunnel therebetween (figure 4b).

With respect to claim 2, Salisbury teaches a pair of ladder-like structures positioned in register with one another to form a tunnel therebetween (figure 4b) wherein the structures are integral with one another (figure 4a) and have a hinge joint axis parallel to the longitudinal axis of the tunnel (bottom portion of structure in figure 4b).

With respect to claims 4, 14, and 17, Salisbury teaches a method for fabricating a precise miniature ladder-type device of a thin malleable electroconductive sheet (figure 4a; column 4, lines 30-48) of material comprising: applying a precise mask by photolithographic techniques of the desired structure on a thin electroconductive sheet (column 4, lines 30-48); etching the unmasked portions to remove precisely the unmasked portions of the sheet material to result in a ladder-like structure with precisely spaced rungs (column 4, lines 30-48); and forming the etched sheet along its longitudinal axis to recess the rung members from the plane of the sheet material (column 4, lines 30-48).

With respect to claim 6, Salisbury teaches the electroconductive material being sufficiently malleable to have the pair of ladder-like structures folded about a continuous linear hinge member (bottom portion of structure in figure 4b) to form an elongated cavity with through linear bore.

With respect to claim 8, Salisbury teaches the rigid structure comprising a circular cross-section (figure 4b).

With respect to claim 15, Salisbury teaches the precise miniature ladder-type device being configured to be folded along a hinge (bottom portion of structure in figure 4b) to form a rigid structure having a defined cross-section.

With respect to claims 16, 19, and 23, Salisbury teaches the defined cross-section being selected from the group consisting of: circular, square, hexagonal, and octagonal (figure 4b).

With respect to claim 18, Salisbury teaches folding the ladder-like structure along a hinge (bottom portion of structure in figure 4b) formed between two half-structures of the ladder-like structure to form a rigid structure having an elongated cavity with through linear bore.

With respect to claim 20, Salisbury teaches providing a substrate from which the precise miniature ladder-type device is formed (column 4, lines 30-48).

With respect to claim 22, Salisbury teaches the hinge joint (bottom portion of structure in figure 4b) axis being configured to allow the pair of ladder-like structures to fold and form the tunnel having a defined cross-section (figure 4b).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,322,996 to Schrager in view of U.S. Patent No. 4,178,533 to Ribout et al. or U.S. Patent No. 4,949,047 to Hayward et al.

Claims 9-11 require that the rigid structure comprise a hexagonal cross-section, an octagonal cross-section, and a square cross-section, respectively. It is well known in the art that one can utilize different cross-sections in order to obtain desired wave propagation, as is evidenced by Ribout (figure 2) and Hayward (figure 1). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize a hexagonal, octagonal, or

Art Unit: 2821

square cross section in the system of Schrager. The motivation for doing so would have been to obtain desired wave propagating values.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,322,996 to Schrager in view of U.S. Patent No. 2,957,103 to Birdsall.

Claim 12 requires that the rigid structure comprise copper or copper alloys. Utilizing such materials is well known in the art, as is evidenced by Birdsall (column 4, lines 9-11). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize copper or copper alloys in the system of Schrager. The motivation for doing so would have been to take advantage of the good electrical conductivity of copper and copper alloys.

14. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,508,108 to Salisbury in view of U.S. Patent No. 4,178,533 to Ribout et al. or U.S. Patent No. 4,949,047 to Hayward et al.

Claims 9-11 require that the rigid structure comprise a hexagonal cross-section, an octagonal cross-section, and a square cross-section, respectively. It is well known in the art that one can utilize different cross-sections in order to obtain desired wave propagation, as is evidenced by Ribout (figure 2) and Hayward (figure 1). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize a hexagonal, octagonal, or

Art Unit: 2821

square cross section in the system of Salisbury. The motivation for doing so would have been to obtain desired wave propagating values.

15. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,508,108 to Salisbury in view of U.S. Patent No. 2,957,103 to Birdsall.

Claim 12 requires that the rigid structure comprise copper or copper alloys. Utilizing such materials is well known in the art, as is evidenced by Birdsall (column 4, lines 9-11). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize copper or copper alloys in the system of Salisbury. The motivation for doing so would have been to take advantage of the good electrical conductivity of copper and copper alloys.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,508,108 to Salisbury in view of U.S. Patent No. 3,322,996 to Schrager.

Claim 13 requires that the rigid structure comprise molybdenum or molybdenum alloys. Utilizing such materials is well known in the art, as is evidenced by Schrager (column 3, lines 11-20). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize molybdenum or molybdenum alloys in the system of Salisbury. The

Art Unit: 2821

motivation for doing so would have been to take advantage of the electrical conductivity properties of molybdenum and molybdenum alloys.

17. Claims 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 3,508,108 to Salisbury in view of U.S. Patent No. 2,957,103 to Birdsall or U.S. Patent No. 3,322,996 to Schrager.

Claims 21 and 24 require providing an electroconductive material comprising at least one of: copper, copper alloy, molybdenum, molybdenum alloy, conductive ceramic, and silicon. Utilizing such materials is well known in the art, as is evidenced by Birdsall (column 4, lines 9-11) and Schrager (column 3, lines 11-20). Therefore, at the time of the invention, it would have been obvious to one having ordinary skill in the art to utilize such materials in the system of Salisbury. The motivation for doing so would have been to provide materials with desired electrical conductivity properties.

Citation of Pertinent References

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patent documents further show the state of the art with respect to ladder-like structures formed of an electroconductive material:

- a. U.S. Patent No. 3,069,588 to Skowron
- b. U.S. Patent No. 3,227,914 to Birdsall et al.
- c. U.S. Patent No. 3,244,932 to Ash

Art Unit: 2821

- d. U.S. Patent No. 3,353,058 to Froom
- e. U.S. Patent No. 3,370,197 to Dix
- f. U.S. Patent No. 4,388,602 to Dodds
- g. U.S. Patent No. 6,584,675 to Rajan et al.
- h. U.S. Patent No. 6,917,162 to Dayton, Jr.

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A. Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 2821

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TUYET VO
PRIMARY EXAMINER